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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

WANG, QUAN ZHEN

ART UNIT PAPER NUMBER

2633

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/027,249 | Applicant(s) MAY ET AL. | |
| | Examiner Quan-Zhen Wang | Art Unit 2633 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/20/01 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the crossbar (wavelength select) switch must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 8 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 8 and 19 recite the limitation "... the wavelength select switch is a crossbar switch ...", however, the current application does not shown the structure of the crossbar wavelength select switch.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-3, 6, 12-14, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prohaska (U.S. Patent Application Publication US 2002/0176658 A1) in view of Felger et al. (U.S. Patent US 5,521,701).

Regarding claim 1 and 12, Prohaska teaches a reconfigurable wavelength selective switch (fig. 7) which receives optical signals (fig. 7, λ_1 - λ_n) from an optical system and select one of the received signals (fig. 7, λ_m) and direct to one output port (fig. 7, Fiber 2). Prohaska differs from the claimed invention in that Prohaska does not specifically teach to measure the power of the selected optical signal with a power meter. However, Felger teaches an optical power meter (fig. 1) which can measure a power level of the optical signal coupled into it. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use the power meter taught by Felger to the system taught by Prohaska in order to measure the optical power of one optical signal channel separated from the plurality of input optical signals of the system.

Regarding claims 2, 13 the optical wavelength selective switch taught by Prohaska can pass a subset of the optical signals (fig. 7, $\lambda_1 - \lambda_{m-1}$, $\lambda_{m+1} - \lambda_n$) through it at substantially the same time (fig. 7, Fiber 3), and these subset optical signals can be coupled to the optical power meter for power measurement.

Regarding claims 3, 14, Prohaska further teaches that the optical signals comprise different wavelengths of optical energy (fig. 7, λ_1 - λ_n).

Regarding claims 6, 17, Prohaska further teaches that the optical wavelength selective switch can be applied in a DWDM system (paragraph 0018).

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2. Claims 1-7, 10-18, 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itou et al. (U.S. Patent US 5,870,217) in view of Ball (U.S. Patent US 6,020,986).

Regarding claims 1, 12, Itou teaches an optical system (fig. 5) comprising: receiving optical signals at a wavelength selective filter (fig. 5, 23), coupling a received optical signal to a power meter (fig. 5, 24) and measuring the power level of the optical signal passed through the wavelength selective filter (column 17, lines 24-33). Itou differs from the claimed invention in that Itou does not specifically teach a wavelength selective switch and use the wavelength selective switch to select the signal. However, Ball teaches an optical wavelength selective switch (fig. 3) which can receive optical signals from an optical communication system (fig. 3, Main line input) and select a wavelength and output the selected wavelength (fig. 3, 28). Ball further teaches to direct the un-selected wavelengths to another output port of the wavelength select switch (fig. 3, 26). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use the optical wavelength selective switch taught by Ball in the system taught by Itou and replace the tunable filter by the wavelength selective optical switch in order to direct the selected wavelength to the power meter and those un-selected optical signal channels to an output port for monitoring spectral shape of the signals.

Regarding claims 2, 13 the optical wavelength selective switch taught by Ball can pass a subset of the optical signal through it at substantially the same time (fig. 3, 26).

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Regarding claims 3, 14 , Itou further teaches that the optical signals comprise different wavelengths of optical energy λ_1 - λ_n (fig. 5).

Regarding claims 4, 15, Itou teaches diverting a portion of optical energy (fig. 5, 18) on an optical medium to obtain the optical signals.

Regarding claims 5, 16, Itou further teaches using a power splitter (optical tap) (fig. 5, COUPLER 18) to divert a portion of the signal power from an incident signal (fig. 5, the signal transmitted over fiber 16).

Regarding claims 6, 17, Ball further teaches that the optical wavelength selective switch can be applied in a DWDM system (column 4, lines 5-13).

Regarding claims 7, 18, it is obvious that the modified system by Itou and Ball can successively direct one of the optical signals through the wavelength selective switch to the power meter and measure the power in the optical signal using the power meter and can cycles the measurement processes.

Regarding claim 10, Itou further teaches to determine if the power in the optical signal has crossed a predetermined threshold and trigger an alarm (fig. 5, 271) if the power in the optical signal has crossed the predetermined threshold.

Regarding claim 11, Itou further teaches to control an optical amplifier (fig. 5, elements 14, 15, 16, 17, 22) in accordance with the power of the optical signal (fig. 5, elements 23, 24, 25, 26, 27) to regulate optical power of the optical signals on the transmission medium (fig. 5, 20).

Regarding claim 20, Itou teaches an optical system comprising: an optical medium (fig. 5, 20) which carries different wavelength of optical energy (fig. 5, λ_1 - λ_n), an optical tap (fig. 5, 18) which siphons the different wavelengths of

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optical energy from the optical medium, a tunable optical filter (fig. 5, 23) to select a wavelength from the siphoned signals, and a power meter which receives the at least one wavelength from the output port and measures power (column 17, lines 24-33) of the signal (fig. 5, 24). Itou differs from the claimed invention in that Itou does not specifically teaches a wavelength selective switch having output ports, which receive receives the siphoned signals from the tap and selectively passes at least one of the wavelengths to one of the output ports. However, Ball teaches a wavelength selective optical switch (fig. 3) having two output ports (fig. 3, 28 and 26) which can receives a multi-wavelength optical signal (fig. 3, main line input) selectively passes at least one of the wavelengths to one of the output ports (fig. 3, 28 and 26). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use the wavelength selective optical switch taught by Ball to the system taught by Itou and replace the tunable filter by the wavelength selective optical switch in order to direct the selected wavelength to a power detector and those non-selected optical signal channels to an output port to monitor spectral shape of the signals.

Regarding claim 21, Itou teaches that the optical tap siphons only a portion of the wavelengths from the medium.

Regarding claim 22, Ball further teaches that those non-selected wavelengths are directed to another output port (fig. 3, 26).

Regarding claim 23, Itou further teaches the system further comprises an optical amplifier (fig. 5, 15, 16, 17, 22, 28) which regulated power of the

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wavelengths of light on the optical medium(fig. 20) in response to measured power in the at least one wavelength (fig. 5, 24, 26, 27).

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Itou et al. (U.S. Patent US 5,870,217) in view of Ball (U.S. Patent US 6,020,986) and further in view of Felger et al. (U.S. Patent US 5,521,701).

Regarding claim 9, the modified system by Itou and Ball differs from the claimed invention in that Itou and Ball do not specifically teach to display an indication of the power in the optical signal. However, Felger teaches an optical power meter (fig. 1) which measures the optical power of the signal coupled into it (fig. 1, 11, 13), and displays an indication of the power in the optical signal (fig. 1, 23, 25, 27, 35, 37, 39). Felger further teaches that the optical power meter has an electrical connector (fig. 4, 77) which enables the power meter to output digital signals (column 6, lines 51-54). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to apply the power meter taught by Felger in the modified system by Itou and Ball in order to display the measured optical power.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ranalli et al. (U.S. Patent Application Publication US 2001/0048556 A1) teaches an optical wavelength selective switch, Scobey et al. (U.S. Patent US 6,320,996 B1) discloses a wavelength selective optical switch.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 8:30 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qzw


M. R. SEDIGHIAN
PRIMARY EXAMINER